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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

KHAN, TAHSEEN

ART UNIT

PAPER NUMBER

1783

NOTIFICATION DATE

DELIVERY MODE

01/18/2012

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/594,840	YOKOYAMA ET AL.	
	Examiner	Art Unit	
	TAHSEEN N. KHAN	1783	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 December 2011.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on ____; the restriction requirement and election have been incorporated into this action.
- 4) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 5) ☒ Claim(s) 1-16 is/are pending in the application.
- 5a) Of the above claim(s) 14-16 is/are withdrawn from consideration.
- 6) ☐ Claim(s) ____ is/are allowed.
- 7) ☒ Claim(s) 1-13 is/are rejected.
- 8) ☐ Claim(s) ____ is/are objected to.
- 9) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 10) ☐ The specification is objected to by the Examiner.
- 11) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 12) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 12/2/2011 has been entered.

Response to Amendment

2. The amendment filed on Applicant's arguments filed on 12/28/2011 is acknowledged. Claim 1 has been amended. Claims 14-16 are withdrawn.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

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5. Claims 1-10, 12, and 13 are rejected under 5 U.S.C. 103(a) as obvious over *Kobayashi* JP_2004/071473_A (see Machine English Translation) in view of *Kajiura* USPN 5,907,382 and *Hiraoka* USPA_20030107465_A1.

6. Regarding claims 1-10 and 12-13, *Kobayashi* discloses forming a **pattern** (Title) on a **substrate** whereon the substrate has a wettability variable layer [element 3 in Figures 1-6 and Abstract; corresponds to claimed forming layer (B)]. *Kobayashi* further discloses that its wettability variable layer [aka "wettability -- strange -- voltinism -- the layer", element 3 in Figures 1-6; corresponds to claimed forming layer (B)] can be comprised of an organic polysilane, as starting monomers, that are irradiated to form organopolysiloxanes (paragraphs 0028-0032, and 0086). *Kobayashi* also discloses that part of its wettability variable layer [aka "wettability -- strange -- voltinism -- the layer", element 3 in Figures 1-6; corresponds to claimed forming layer (B)] can be **irradiated** by UV light via a **mask** to form high-wettability irradiated portions (element 3A in Figures 4-6) on its layer (Abstract and paragraphs 0016, 0038, 0087). *Kobayashi* additionally discloses **applying a solution** [aka "coating liquid"; element 10 in Figure 4) comprised of a **hydrophilic solvent** (paragraphs 0049, 0055, and 0080), **water** (paragraph 0055), and **polymers** such as **polyanilines** (paragraph 0052) and **polythiophenes** (paragraph 0088) to form a **layer** [element 10' in Figures 4-7; corresponds to claimed layer (C)] over at least the irradiated portions. Since *Kobayashi* discloses having electrodes and known conductive **oxides** like ITO (paragraph 0068) on its substrate, it would therefore be analogous to the claimed conductive substrate (A). Lastly, *Kobayashi* discloses that

its patterned substrate can be used in **organic devices, organic transistors, organic solar cells, organic electroluminescence devices**, etc. (paragraph 0004).

7. However, *Kobayashi* does NOT explicitly disclose the following limitations:

- using radiation to oxidize its starting material of organic polysilanes,
- impregnating its wettability variable layer [aka "wettability -- strange -- voltinism -- the layer", element 3 in Figures 1-6; corresponds to claimed forming layer (B)] with its conducting organic polysilanes, and
- applying a solution of its conductive polymer to the "whole area" of its wettability variable layer [aka "wettability -- strange -- voltinism -- the layer", element 3 in Figures 1-6; corresponds to claimed forming layer (B)].

8. *Kajiura* discloses irradiating a polysilane thin film which results in photo-oxidation that produces a polysiloxane thin film that is subsequently placed on a substrate (column 12, lines 43-53). *Kajiura* further discloses impregnating its polysilane thin film layer as well with conductive silane coupling agents (column 15, lines 44-56). *Kajiura* discloses using its substrate and polysilane thin film in applications such as EL displays (column 16, lines 13-29) to provide a transparent conductive substrate having a base with both heat resisting characteristic and optical characteristics. *Kajiura* further discloses that its invention can provide a transparent conductive substrate with a scratch resisting characteristic, an oxygen barrier characteristic, a steam barrier characteristic, and adhesion of a transparent electrode layer; wherein the substrate can be used to provide a small, thin, and light display apparatus having the above-described transparent conductive substrate (column 3, lines 9-20).

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9. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the process, of *Kobayashi*, by irradiating its organic polysilane starting materials to oxidize them into organic polysiloxanes and to subsequently impregnate its conductive layer with silanols, as is exemplified by *Kajiura*. One of ordinary skill in the art would have been motivated in doing so in order to obtain the benefits of *Kajiura's* transparent conductive substrate such as its scratch resisting characteristic, an oxygen barrier characteristic, a steam barrier characteristic, and adhesion of a transparent electrode layer.

10. *Hiraoka* discloses forming a substrate for electric and communication fields (paragraph 0002); wherein a conductive pattern can be made (paragraph 0050). *Hiraoka* further discloses that it is known in prior art to use solutions of conductive polymers having a hydrophilic solvent and then immersing the irradiated sheets into it in order for the conductive polymer to impregnate the entire sheet including the irradiated portions (paragraph 0064). *Hiraoka* further exemplifies doing this in its Examples (paragraph 501). *Hiraoka* further discloses that its method helps in freeing its invention from problems such as layer peeling (Abstract).

11. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the wetting layer, of *Kobayashi*, by immersing it in its conductive polymer solution entirely, as exemplified by *Hiraoka*. One of ordinary skill in the art would have been motivated in doing so in order to prevent peeling in its invention as disclosed above by *Hiraoka*.

12. Alternatively, Regarding claims 1-7, the processes of forming the patterned substrate disclosed in claims 1-7 are not essential to a determination of patentability of the composition disclosed in the claim. The patentability of product-by-process claims is based on the product itself. “[E]ven though product-by-process claims are limited by and defined by the process; determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process.” In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). See MPEP 2113. The examiner respectfully submits that none of the limitations claimed in claims 1-7 by applicants impart a structural property in the end product of their claimed patterned substrate. The examiner has shown above that processes utilized by the motivated combination of, *Kobayashi* in view of *Kajiura*, implies all of the nuances of the claimed processes.

13. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over *Kobayashi* JP_2004/071473_A (see Machine English Translation) in view of *Kajiura* USPN 5,907,382 and *Hiraoka* USPA_20030107465_A1, as applied to claim 1, and further in view of *Veres* WO_2004/013922_A2.

14. Regarding claim 11, *Kobayashi* in view of *Kujiara* suggests that its patterned substrate can be used to form organic devices, organic transistors, organic solar cells, organic electroluminescence devices, etc. (paragraph 0004). However, the combination does not disclose forming photosensors.

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15. *Veres* discloses forming a pattern on a substrate that can be used in organic electronic devices such as organic solar cells and organic photosensors (Abstract).

16. It would have been obvious to one of ordinary skill in the art to use the patterned substrate, of *Kobayashi*, for devices such as photosensors as exemplified by *Veres*.

One of ordinary skill in the art would have been motivated in doing so due to the analogous subject matter as well as the fact that *Veres* uses its patterned substrate in organic solar cells, as does *Kobayashi*.

Response to Arguments

17. Applicant's arguments with respect to all elected claims have been considered but are moot in view of the new ground(s) of rejection.

CONCLUSION

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to TAHSEEN KHAN whose telephone number is (571)270-1140. The examiner can normally be reached on Monday to Thursday from 7:30am-5:30pm EST.

19. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David R. Sample can be reached on (571)272-1376. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

20. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

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For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/T.N.K./

TAHSEEN N. KHAN

Patent Examiner, Art Unit 1783

January 10, 2012

/Angela Ortiz/

Supervisory Patent Examiner, Art Unit 1798